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Perpustakaan Sultanah Nur Zahirah (UMT) -
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Production and purification of polysaccharide from marine
bacterium isolated from sea cucumber / Norapissah Sabran.



PERPUSTAKAAN SULTANAH NUR ZAHIRAH
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HAK MILIK
PERPUSTAKAAN SULTANAH NUR ZAHIRAH UMT

PRODUCTION AND PURIFICATION OF POLYSACCHARIDE
FROM MARINE BACTERIUM ISOLATED FROM
SEA CUCUMBER, *Holothuria atra*

By
Norapissah Bt Sabran

Research report submitted in partial fulfillment of the
requirement for the degree of Bachelor of Science (Marine Biology)

Department of Marine Science
Faculty of Maritime Studies and Marine Science
UNIVERSITY MALAYSIA TERENGGANU
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JABATAN SAINS MARIN
FAKULTI PENGAJIAN MARITIM DAN SAINS MARIN
UNIVERSITI MALAYSIA TERENGGANU

PENGAKUAN DAN PENGESAHAN LAPORAN
PROJEK PENYELIDIKAN I DAN II

Adalah ini diakui dan disahkan bahawa laporan penyelidikan bertajuk:

Production and purification of polysaccharide from marine bacterium isolated from sea cucumber, *Holothuria atra* oleh Norapissah binti Sabran, No .Matrik UK10443 telah diperiksa dan semua pembedaan yang disarankan telah dilakukan. Laporan ini dikemukakan kepada Jabatan Sains Marin sebagai memenuhi sebahagian daripada keperluan memperoleh **Ijazah Sarjana Muda Sains (Biologi Marin)**, Fakulti Pengajian Maritim dan Sains Marin, Universiti Malaysia Terengganu.

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CONTENTS		PAGE
ACKNOWLEDGEMENT		ii
LIST OF TABLES		vi
LIST OF FIGURES		vii
LIST OF ABBREVIATIONS		viii-ix
LIST OF APPENDICES		x
ABSTRACT		xi
ABSTRAK		xii
CHAPTER I	INTRODUCTION	1-2
CHAPTER II	LITERATURE REVIEW	
	2.1 Sea cucumber	3-4
	2.2 Bacteria and Holothurians	5-6
	2.3 Polysaccharide and Bacteria	7-8
CHAPTER III	METHODOLOGY	
	3.1 Sampling	9
	3.2 Isolation of Bacteria	9
	3.3 Identification of bacterium	10
	3.3.1 Gram staining	10
	3.3.2 Cultural and physiological characteristics	10

	3.3.3 Biochemical Characteristics	11-13
	3.3.4 REMEL identification kit	13-14
3.4	Production and purification of polysaccharides	15-16
3.5	Chemical analysis of polysaccharide	17
	3.5.1 Paper chromatography	17
	3.5.2 High Performance liquid chromatography	17
CHAPTER IV	RESULTS	
4.1	Isolation of bacteria	18
4.2	Identification of bacteria	19
	4.2.1 Gram staining	19
	4.2.2 Cultural and physiological characteristics	20-22
	4.2.3 Biochemical test	23
	4.2.4 REMEL identification kits	24
4.3	Acidic polysaccharides production	25
4.4	Purification of polysaccharides	26-27
4.5	Chemical analysis of polysaccharide	28
	4.5.1 Paper Chromatography (PC)	28-30
	4.5.2 High Performance Liquid Chromatography (HPLC)	31-33

CHAPTER V	DISCUSSION	
5.1	Isolation of bacteria	34
5.2	Identification of bacteria	35
	5.2.1 Gram staining	35
	5.2.2 Cultural and physiological characteristics	36
	5.2.3 Biochemical test	37-40
	5.2.4 REMEL identification kits	41-42
5.3	Production, purification and chemical analysis of Polysaccharides	43-44
CHAPTER VI	CONCLUSION	45-46
REFERENCES		47-50
APPENDICES		51-59
CURRICULUM VITAE		60

LIST OF TABLES

Tables	Page
4.1 Cultural characteristics of bacteria colonies growth on Nutrient agar (NA 1.5% NaCl)	18
4.2 Growth of the isolate bacterium in seawater agar and seawater broth	20
4.3 The bacterium growth in different concentration of seawater	21
4.4 The bacterium growth in different temperature	22
4.5 Biochemical test results	23
4.6 Sensitivity to anti-bacterial agent	23
4.7 Yield of isolated bacterium produced polysaccharides associated with sea cucumber, <i>H. atra</i>	25
4.8 Yield of purified acidic polysaccharide by DEAE cellulose column Chromatography	27
4.9 Sugar composition of polysaccharide with HCl analyses using paper chromatography (PC)	28
4.10 Sugar composition of polysaccharide with HCl analyses using High Performance Liquid Chromatography (HPLC)	31

LIST OF FIGURES

Figure		Page
4.1	Gram staining result for isolated bacteria of G2.	19
4.2	Elution profile of the acidic polysaccharide on DEAE-cellulose (diethyl aminoethyl cellulose) column of using a series of NaCl concentration (0.0-4.0 M) in 0.01 M phosphate buffer	26
4.3	The sugar composition in (maltose, galactose and rhamnose) crude polysaccharide by using Paper Chromatography (PC)	29
4.4	The sugar composition (maltose, galactose and rhamnose) in acidic polysaccharide by using Paper Chromatography (PC)	30
4.5	HPLC chromatogram of hydrolyzed crude polysaccharide with 2 M HCL	32
4.6	HPLC chromatogram of hydrolyzed acidic polysaccharide with 2 M HCL	33

LIST OF ABBREVIATIONS

SSW	Sucrose Sea Water
NaCl	Sodium Chloride
SIM	sulfide indole motility
MR	Methyl Red
VP	Voges-Proskauer
GF/F	Whatman glass microfiber filter
5B	Advantec filter paper
PC	paper chromatography
HPLC	high performance liquid chromatography
ELCD	evaporation light scattering detector
ADH	Arginine
TRD	Aliphatic thiol
EST	Triglyceride
PHS	p-Nitrophenyl-phosphoester
NAG	p-Nitrophenyl-N-acetyl- β ,D-glucosaminide
β GLU	p-Nitrophenyl- β ,D-glucoside
α GLU	p-Nitrophenyl- α ,D-glucoside
ONPG	p-Nitrophenyl- β ,D-galactoside
URE	Urea
GLU	Glucose

PRO	Proline- β -naphthylamide
PYR	Pyrrolidonyl-b-naphthylamide
GGT	γ -Glutamyl β -naphthylamide
TRY	Tryptophane β -naphthylamide
BANA	N-Benzyl-arginine - b - naphthylamide
IND	Tryptophane
NO ₃	Sodium nitrate
OXI	Oxidase
M	molar
μ L	microliter
nm	nanometer
glc	glucose

LIST OF APPENDICES

Appendix		Page
1	Map of sampling site	51
2	Culture of samples from four parts of <i>Holothuria atra</i> body (A-outer body surface, B- cloacal opening, C-skin, D-internal mucus)	51
3	Sucrose sea water agar	52
4	Sucrose sea water broth	52
5	Autoclave	53
6	Fume chamber	53
7	Centrifuge	54
8	Oven	54
9	Shaker	55
10	Auto fraction collector	55
11	Chromatography chamber	56
12	High performance liquid chromatography (HPLC)	56
13	Acidic polysaccharide	57
14	Crude polysaccharide	57
15	Freeze dry	58
16	DEAE-cellulose columns	58
17	Spectrophotometer value for phenol-sulfuric acid method	59

ABSTRACT

The sea cucumber, *Holothuria atra* was used in this study in order to isolate and identify the associated bacterium. A bacterium was selected from 5 different colonies (G1, G2, G3, G4 and G5) of bacteria obtained from the media cultured. The isolation and identification were done to produce and purify polysaccharide from that bacterium. This study also analyses the chemical composition of polysaccharide produced by the selected bacterium. The selected bacterium isolated from sea cucumber was identified as Gram Negative bacterium, *Sphingomonas paucimobilis* by using RapID™ NF Plus system. The identification was obtained by combining of result from the biochemical characteristics. The yield of crude polysaccharide produced was 608.2 milligram (mg) per 1 liter (L) while the acidic polysaccharide was 231.6 mg per 1L. Most of the purified acidic polysaccharide produced was from 0.4M to 0.6M concentration of NaCl buffer. The analyses of polysaccharide were carried out using Paper Chromatography (PC) and High Performance Liquid Chromatography (HPLC). The sugar presence for PC analysis was maltose, galactose and rhamnose for crude and purified acidic polysaccharides. The HPLC shows the same sugar presence as PC analyses except for crude polysaccharide with the absence of maltose sugar.